

Needle Nematodes: Longidorus spp.

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The needle nematodes comprise a large group of over 60 described species belonging to the genus Longidorus Micoletzky 1922 (3,8,12). These are very long and slender nematodes and within this group are the longest plant parasitic nematodes known (5). Adults range in size from 2 mm to 12 mm in length. These nematodes are found in many areas throughout the warmer and temperate regions of the world. They infect a wide variety of crops, weeds, and trees. Additionally, 4 species of needle nematodes are capable of transmitting plant viruses.

HOSTS AND DISTRIBUTION:

A routine search of both the published literature and the unpublished Division of Plant Industry files indicates that needle nematodes have been reported from many parts of the world including: Algeria, Austria, Belgium, Bulgaria, Canada, Canary Islands, Costa Rica, Cuba, Czechoslovakia, Egypt, England, France, Germany, Greece, Hungary, India, Iran, Israel, Italy, Jamaica, Japan, Lebanon, Mexico, The Netherlands, New Zealand, Nyasaland, Pakistan, Panama, Poland, Puerto Rico, Rhodesia, Scotland, the Soviet Union, Spain, Sudan, Sweden, Switzerland, Thailand, Taiwan, Turkey, United States, and Yugoslavia.

Needle nematodes have caused severe wilting and/or stunting of lettuce, sugarbeet, sorghum, strawberry, tobacco, onion, celery, gladiolus, cucumber, and carrot (2,5,6,7,13,14). The nematodes cause mild decline on grape vines, Rhodes grass, and alfalfa, as well as the pre-emergence death of cotton (2,5,14). In the United States, peppermint has been severely damaged by these nematodes (4). Other plants affected by the needle nematodes include millet, barley, wheat, potato, artichoke, chicory, apple, pear, plum, mulberry, guava, rose, pineapple, narcissus, rye grass, corn, lavender, sage, buckwheat, tea, sugarcane, tamarind, asparagus, oak, leek, parsley, cabbage, white and red clover, tomato, fig, table beet, black currant, petunia, and hops (9,10,11,14). A variety of weeds and trees are also hosts of the needle nematode.

SYMPTOMS:

There is evidence to support the generalization that similar root symptoms are caused by the feeding action of all species of needle nematodes. The nematodes cluster at the tips of the roots, and their feeding results in cessation of meristematic activity and root elongation. This is followed by the formation of terminal swellings or galls which may be elongated or slightly curved, and by necrosis and dwarfing of small feeder roots. Lateral and sometimes tap roots may be severely stunted. Young roots may have small, sometimes discolored galls at the tips, often with a necrotic spot on each gall where the stylet was inserted. An overall stubby root appearance is created. A relatively short period of feeding can be enough to initiate these symptoms (1,2,9). In one instance, the roots of bur marigold (Bidens tripartita L.) continued to swell for 3 days after the nematode had fed for only 15 minutes and withdrawn from the root (2).

The top parts of severely affected plants show retarded development and wilting which reflect the effect of a heavily damaged and severely stressed root system.

SURVEY AND DETECTION:

- 1) Look for plants which are stunted, wilted, and display unthrifty growth. Examine the roots for a stubby appearance with swollen or galled tips.
- 2) Submit approximately one pint of combined soil and roots to a nematology laboratory. Because these nematodes are unusually long, are ectoparasitic feeders, and occur at depths down to 30 cm, it is recommended that samples be taken to a depth of 30 cm, and soil and roots be collected in chunks by shovel rather than in cores with a small diameter soil sampling tube which could injure the nematodes.

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